



# How can we measure that?

## NOAA Corps



Name \_\_\_\_\_ Class \_\_\_\_\_

NOAA collects a lot of data in the oceans, land, and air all over the United States and even all over the world. To gather information NOAA uses different types of airplanes and ships.

Read through the situations below and determine if it would be better to use a ship or a plane. If a ship, should it be big or small? Move fast or slow? If a plane, should it fly high or low? Fly fast or slow? You can read the descriptions of NOAA's airplanes and ships in the attached pages to determine the best one to use.

### Hurricanes

How can we measure wind speed in a hurricane? The amount of water in a hurricane?  
The atmospheric pressure of a hurricane?

Airplane or Ship

Big or Small

Fast or Slow

High or Low

Describe the ship or plane you think would be most useful: \_\_\_\_\_

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### Amount of fish

NOAA measures fish populations in order to tell commercial fisherman how much they can catch. How can NOAA measure the amount of fish in the US coastal waters?

Airplane or Ship

Big or Small

Fast or Slow

High or Low

Describe the ship or plane you think would be most useful: \_\_\_\_\_

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## Snowpack

NOAA measures snowpack across the US and Canada in order to forecast the amount of water that will be in rivers and floods. How can NOAA efficiently measure snow?

Airplane or Ship

Big or Small

Fast or Slow

High or Low

Describe the ship or plane you think would be most useful: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Marine mammals

NOAA helps to protect marine mammals living on the US coast and oceans. How does NOAA figure out where these animals are and how many there are?

Airplane or Ship

Big or Small

Fast or Slow

High or Low

Describe the ship or plane you think would be most useful: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Improved maps

NOAA continuously improves nautical charts for ships to use. For example, storms can change where obstacles to ships are. How does NOAA help to make new maps?

Airplane or Ship

Big or Small

Fast or Slow

High or Low

Describe the ship or plane you think would be most useful: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



# Beechcraft King Air 350CER



- Primarily used to help create coastal maps and emergency response.
- Many instruments on the aircraft, including digital cameras, sensors and LIDAR.
- Aircraft can hold 2 pilots and 2 crew members.
- It can stay in the air for 7-8 hours.
- Can fly as high as 35,000 ft.
- Based in Lakeland, Florida.





# NOAA DCH-Twin Otter N56RF



- Is capable of a short runway takeoff and landing.
- Can stay airborne for 4-6 hours and flies well at slower speeds.
- Can fly as high as 25,000 feet.
- Aircraft holds 2 pilots and can seat up to 6 in the cabin.
- Used for marine mammal surveys, to collect data in the water and air, and for emergency response.
- Based in Lakeland, Florida.





# Gulfstream IV-SP (G-IV)



- Nicknamed Gonzo
- Aircraft is used to assist in hurricane forecasting, it flies around and above hurricanes and developing tropical storms.
- Can fly as high as 45,000 ft.
- Aircraft carries 2-3 pilots and 6 scientists and technicians.
- Can fly for over 8 hours.
- Aircraft drops dropsondes to measure air pressure, temperature, humidity and wind speed. It also has a doppler radar.





# Gulfstream Turbo (Jet Prop) Commander AC-695A



- This aircraft flies all around the United States and Canada.
- Aircraft can hold 2 pilots and one observer.
- The aircraft uses a gamma radiation detector to measure snowpack. Snow information helps to forecast river flows and flooding events.
- Gamma radiation detector is also used to measure soil moisture.
- Aircraft also collects data for the gravity measuring survey to improve maps and calibrate GPS.
- Can fly as high as 35,000 ft.





# Lockheed WP-3D Orion



- This aircraft is NOAA's hurricane hunter. NOAA has 2 Orion planes, nicknamed "Kermit" and "Miss Piggy".
- Aircraft has 2 doppler radars, Step Frequency Microwave Radiometers, and can release dropsondes and bathythermographs
- The hurricane hunters fly into tropical storms and hurricanes.
- The aircraft can hold 2 pilots and up to 21 scientists and technicians.
- Can fly as high as 27,000 ft and as long as 11 hours.
- Aircraft also collects atmospheric measurements around the US.



# Bell M. Shimada



- Fishing survey vessel
- Studies marine life, sea birds and ocean conditions
- Travels along the west coast
- Designed to move quietly
- Home port is Newport, Oregon
- Cruising speed of 11 knots





# Fairweather



- Hydrographic Survey vessel
- The Fairweather collects data for NOAA cartographers
- Cartographers create and update nautical charts
- Charts are used by private, commercial and government ships
- Updated and precise charts allow for safe travel in ocean waters
- Home port is Ketchikan, Alaska

# Ferdinand R. Hassler



- Hydrographic Survey vessel
- The Fairweather collects data for NOAA cartographers
- Cartographers create and update nautical charts
- Charts are used by private, commercial and government ships
- Updated and precise charts allow for safe travel in ocean waters
- Home port in New Castle, New Hampshire



# Gordon Gunter



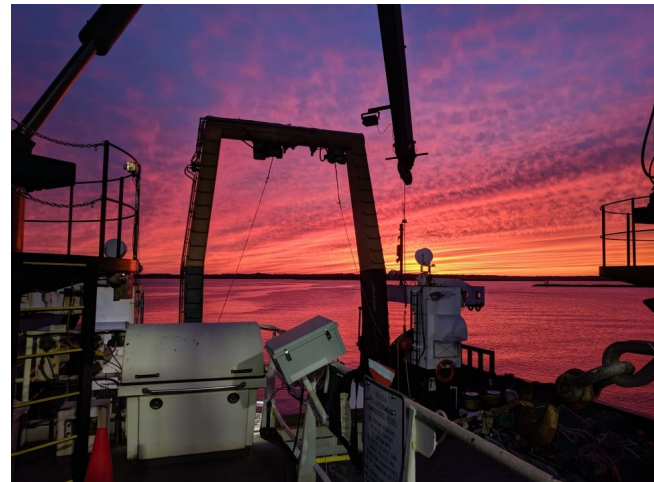
- Multipurpose oceanographic research vessel
- Monitors abundance of fisheries resources
- Also monitors health of marine mammals
- Travels in the Gulf of Mexico, Caribbean Sea and Atlantic Coast
- Has a crew of 20 people
- Home port is Pascagoula, Mississippi



# Henry B. Bigelow



- Fisheries Survey Vessel
- Studies marine life and ocean conditions
- Monitors fish stocks
- Conducts habitat assessments
- Studies marine mammal and seabird populations
- Home port is Newport, Connecticut





# Hi'ialakai



- Multipurpose oceanographic research vessel
- Maps coral reef ecosystems
- Assesses coral reef health
- Monitors fish stocks
- Surveys maritime heritage
- Home port is Honolulu, Hawaii

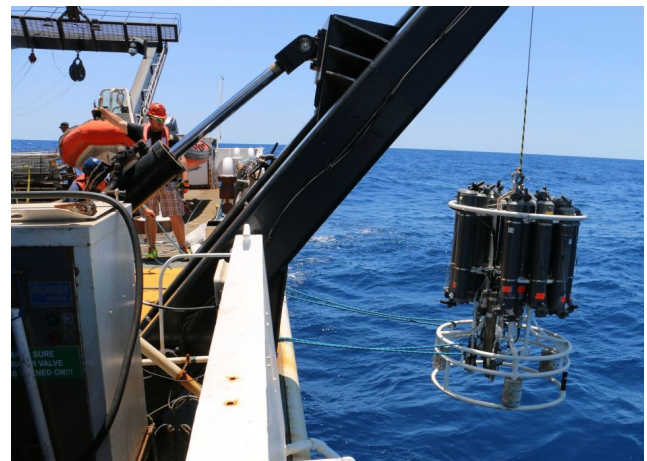




# Nancy Foster



- Supports fish habitat and population studies
- Creates maps of the seafloor
- Collects data for oceanographic studies
- Surveys maritime heritage
- Able to sample water and sediment
- Home port is Charleston, South Carolina

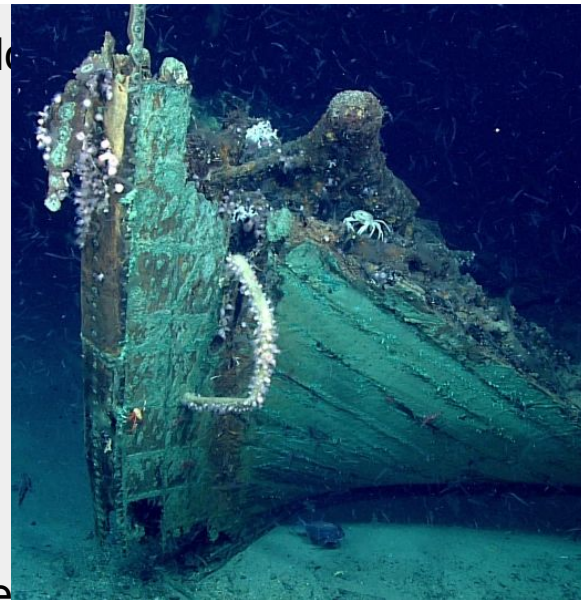




# Okeanos Explorer



- Considered “America’s ship for ocean exploration”
- Dedication to exploration and discovery
- Maps the seafloor
- Explores shipwrecks
- Home port is Kingstown, Rhode Island
- Characterizes largely unknown parts of the ocean
- Carries two Remotely Operated Vehicles (ROVs)
  - Discoverer and Seirios



# Oregon II



- Monitors fish stock
- Surveys plankton
- Surveys marine mammals
- Travels the Atlantic Ocean and Caribbean Sea



- Designed to be at sea for longer periods and through various sea and weather conditions
- Home port is Pascagoula, Mississippi



# Oscar Dyson



- Fisheries survey vessel
- Ultra quiet
- Collects data on fish populations
- Conducts mammal and seabird surveys
- One of the most technologically advanced fisheries survey vessels in the world
- Home port is Kodiak, Alaska



# Oscar Elton Sette



- Multipurpose oceanographic research vessel
- Assesses fisheries populations
- Conducts physical and chemical oceanography research
- Surveys marine mammals
- Researches marine debris
- Home port is Honolulu, Hawaii





# Pisces



- Fisheries survey vessel
- Ultra quiet
- Conducts marine resource surveys
- Equipt for a wide range of ecosystem research projects
- Travels in the Gulf of Mexico, Caribbean, and Atlantic Ocean around southern US
- Home port is Pascagoula, Mississippi



# Rainer



- Hydrographic survey vessel
- Maps the ocean
- Charts are made to help commerce, improve coastal resilience, and understand the marine environment
- Has the most productive hydrographic survey platform in the world
- Home port is Newport, Oregon





# Reuben Lasker



- Fisheries survey vessel
- One of the most technologically advanced fishing vessels in the world
- Surveys fish populations
- Also surveys marine mammal, seabird and turtle populations on US west coast
- Home port is San Diego, California



# Ronald H. Brown



- Oceanographic and atmospheric research vessel
- Largest vessel in the NOAA fleet
- Travels worldwide to support scientific studies
- Research increases our understanding of the ocean and climate
- Can move as fast as 15 knots
- Home port is Charleston, South Carolina



# Thomas Jefferson



- Hydrographic survey vessel
- Maps the ocean
- Charts are made to help commerce, improve coastal resilience, and understand the marine environment
- Cruising speed is 11 knots
- Can travel 19,200 nautical miles before refueling
- Home port is Norfolk, Virginia

